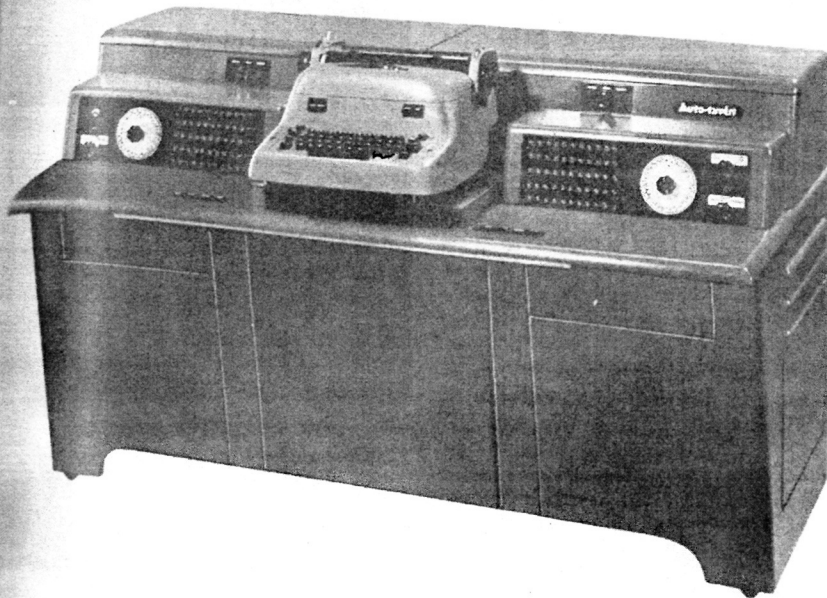


An Air-Operated Automatic Typewriter



AUTO-TYPIST CONSOLE

Any standard typewriter can be converted to automatic operation by mounting it as shown here. The dials at each side are switches for making the change from manual to mechanical operation. Perforated record rolls, one containing various paragraphs and the other names and addresses, are mounted inside the housing. The operator selects the ones desired by punching numbered keys on each side of the machine. Paragraphs may be typed in any sequence, the roll turning at high speed until the one designated is reached. Then it slows to typing speed.

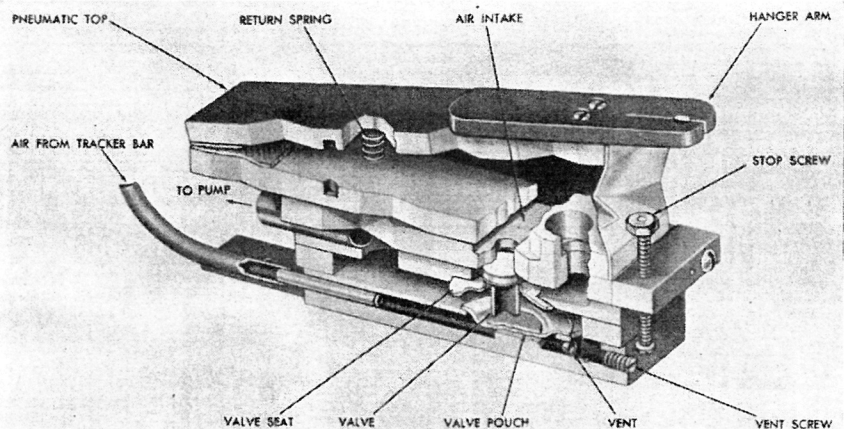
AIR is taking over one of the big time-consuming chores of stenographers and typists, that of writing form letters which differ only in address and salutation. Much of the typed material sent out by offices and agencies is direct-mail advertising and stock replies to routine inquiries. To facilitate clerical work of this kind, the American Automatic Typewriter Company has developed the "50" series air-operated Auto-typist, a machine that will automatically turn out up to 100 average-length paragraphs by means of any standard typewriter.

Perforated rolls, similar to the record rolls which operated the old player piano, are fed to the Auto-typist. Two are generally used and are punched on a special machine either in the office or by the manufacturer of the Auto-typist. One

carries names and addresses taken from a mailing list; the other is perforated with a series of holes which represent the letter to be sent to each name on the list. But in the case of mail for which no address roll has been cut, the addresses as well as the date are typed in the regular way and only one roll is used to operate the machine automatically. Many different letters can be written simply by changing the record roll, a one-minute job.

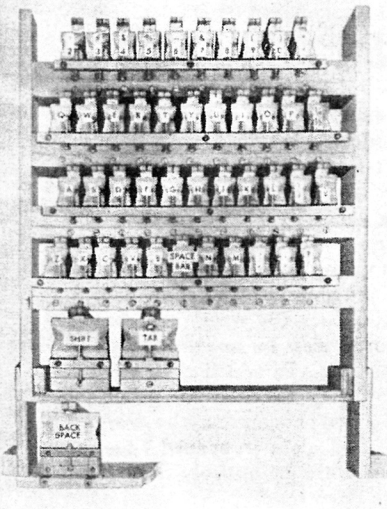
Operation of the machine is based on the vacuum principle. Vacuum is induced by an electrically driven pump consisting of four bellows, each connected to the crankshaft spider by a pump strap. The bellows work in succession and the action is continuous, so that vacuum is maintained all the time the motor is running. A vital part of the mechanism is a tracker bar, a metal strip with a series of holes, one for each typewriter key as well as for the shift, tabulator, stop, skip, repeat, and rewind actions. Rubber tubes connect the tracker-bar openings with the various keys and with "action pneumatics" mounted in banks underneath the typewriter. There is one for each key, to which it is connected by a wire.

When the operator presses a push button to start the Auto-typist, the roll is drawn over the tracker bar. Outside air enters one of the pneumatics through a valve mechanism, equalizing the air pressure exerted on top of the pneumatic while a compression spring keeps the bellows in raised position, as shown in an



HOW KEYS ARE OPERATED

The bank of "action pneumatics" shown at the left is mounted under the typewriter. Each pneumatic—one for each character on the keyboard—is connected to its key by a wire. A cutaway view of an individual pneumatic appears above. The hanger arm is normally in the position shown, being kept raised by the return spring. When the roll perforation corresponding to the key is reached, a valve opens a channel leading to a bellowslike space beneath the hanger bar and the air is exhausted. The bellows then collapses, draws down the hanger arm and thus actuates the key. As the roll moves on, the connection to the vacuum pump is broken, air is admitted to the bellows, and this, plus the spring action, raises the bar and lets the key return to rest. The striking force of the keys is regulated by a governor that controls the degree of suction induced. Typing speed depends upon the rate at which the record rolls turn.



accompanying illustration. As each perforation in the roll passes over the corresponding hole in the bar, an impulse of air from the tracker bar travels down through the tube to the valve and enters the vent channel below the valve pouch. This combination of atmospheric pressure on the underside of the pouch and pump suction on the upper side causes the pouch to lift the valve off its seat and to close the air intake. When in this position, the valve opens a passage from the bellows to the vacuum channel, permitting the pump to withdraw the air from the bellows. The latter then collapses, drawing down with it the hanger arm and wire to which the typewriter key is attached, thus actuating it.

As soon as the opening in the tracker bar is closed by the movement of the roll, the flow of impulse air through the tube ceases, the vacuum pump withdraws what air remains in the tube and vent channel, and the valve pouch and valve return to their normal or "down" position. This closes the passage from the bellows to the vacuum channel and opens the air intake. The flow of outside air into the bellows, plus the action of the spring, raises the bellows and releases the typewriter key. The sequence of operations is almost instantaneous, and the

key is released in time to make room so the next key can come into action.

Any make of typewriter, including noiseless, can be easily mounted on the Auto-typist. In the case of an electric machine, the carriage is returned by a key on the typewriter keyboard that is depressed by a small pneumatic like those that operate the other keys. On all other types it is shifted by a cord fastened to the spacer lever at the side left of the carriage proper. The speed at which the Auto-typist works varies with the typewriter and is set at the time of installation. The touch is adjustable so it will correspond to that of the operator.

Speeds may run as high as 150 words a minute, or sufficient to produce up to 200 letters a day. The machine also addresses envelopes automatically at the rate of nearly 1500 daily and can be used to do billing and invoicing with a typewriter designed for that purpose, the Auto-typist printing the address, terms, and services rendered. It is claimed that the machine, largely because of the flexibility of the pneumatics, permits operating any typewriter at its maximum speed and, what is also important, leaves the typist free for nonrepetitive work while it is in action.

Lumber Trimmer with Air-Controlled Saws

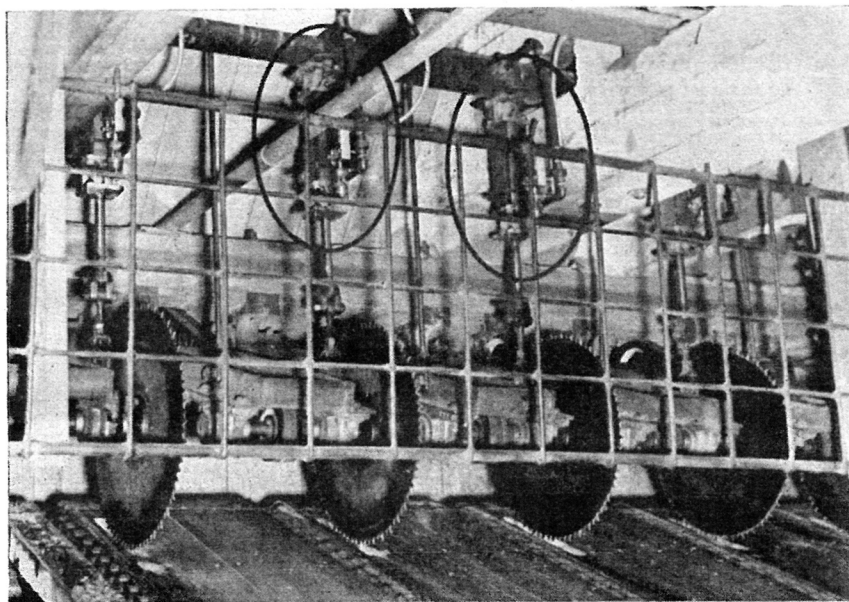
ONE of the newer of the many applications of compressed air in sawmills is that in connection with a "pony" trimmer built by Galbraith & Sulley, Ltd., for a Vancouver, B. C., plant. It is a small version of the heavy automatic type that is standard equipment in most West Coast lumber mills. But where the latter takes boards and timber up to 8

inches thick and 40 feet long and trims and cuts them into commercial lengths, the maximum capacity of the smaller unit is around 4 inches and 21 feet, respectively.

The installation in question has eleven circular saws arranged side by side with varying distances between them: Nos. 1 and 2 are 1 foot apart; Nos. 2 and 3, four

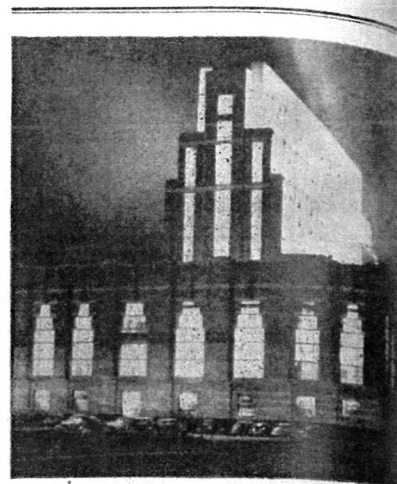
feet; and Nos. 3 and 11, inclusive, 2 feet. Each is independently mounted above an inclined table in a hinged frame and is V-belt driven from a shaft passing through the hinges and direct-connected to a 40-hp. motor. The pneumatic feature of the trimmer is a group of 4-inch-diameter cushioned air cylinders, one to raise and lower each saw. They are of the heavy-duty Ledeen type and have a 6-inch stroke. Normally they hold the saws approximately 10 inches above the table. Drawing air at a pressure of 80 to 90 psi. from an overhead pipe, they are actuated independently or in any desired combination by Valvair 3-way solenoid valves remote controlled from a push-button panel at the operator's station.

Motor-driven chains on 2-foot centers with lugs every 3 feet carry the lumber over the inclined table to the trimmer at the rate of one every 1½ seconds, two saws meanwhile cutting off the ends and producing boards of even or odd lengths in 1-foot multiples, depending upon their position on the traveling chains. They are generally placed so that Saw No. 2 trims the end nearest the operator, thus providing pieces 4 to 20 feet long. But to prevent wastage, Saw No. 1 sometimes does the work. In that case the boards may be anywhere from 5 to 21 feet long. In addition to trimming, the saws may be used for other purposes. Any two or more may be dropped to cut out bad spots or, spaced 4 feet apart, to chop slabs or entirely defective boards into cordwood.



IN CUTTING POSITION

Shown here are a few of the eleven circular saws on the "pony" trimmer. Each is connected to a vertical air cylinder (in black ovals) by which it can be raised and lowered at the rate of 40 times a minute.



UNOBTRUSIVE STACKS

This municipal power-generating station in Lansing, Mich., has stacks but they are hardly evident. By designing them on the venturi principle, with induced-draft fans in their bases, Pratt & Whitney Corporation, of East Port Chester, Conn., kept them so short that they could be concealed in the parapet at the top of the plant. At first glance the structure looks like an office building. This aesthetic touch was imparted to it in deference to the civic pride of the residents of Michigan's capital city.